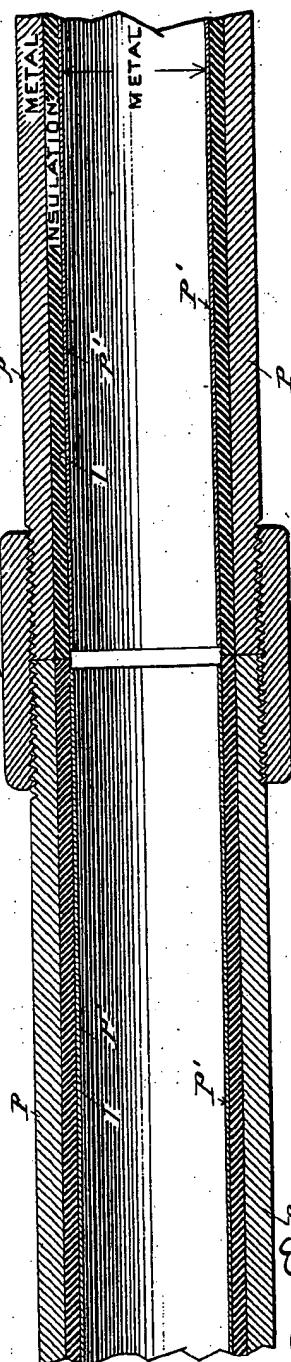


(No Model.)

E. T. GREENFIELD.  
CONDUIT TUBE.

No. 570,169.

Patented Oct. 27, 1896.



WITNESSES:

*Edward G. Rowland.*  
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INVENTOR

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# UNITED STATES PATENT OFFICE.

EDWIN T. GREENFIELD, OF NEW YORK, N. Y., ASSIGNOR TO THE INTERIOR CONDUIT AND INSULATION COMPANY, OF SAME PLACE.

## CONDUIT-TUBE.

SPECIFICATION forming part of Letters Patent No. 570,169, dated October 27, 1896.

Application filed May 13, 1896. Serial No. 681,368. (No model.)

*To all whom it may concern:*

Be it known that I, EDWIN T. GREENFIELD, a citizen of the United States, residing at New York, in the county of New York and State 5 of New York, have made a new and useful Invention in Conduit-Tubes, of which the following is a specification.

My invention is directed to improvements in armored conduit-tubes, such as are used 10 for the purpose of protecting electrical conductors, and its object is to provide such conduits in which the insulation on the inner side of the conduit is made either wholly or in part of material which will fuse or liquefy 15 under abnormal temperatures with an interior lining of metal or other non-fusible or non-combustible material.

In the use of armored conduits in buildings and analogous places where electrical 20 conductors are protected by such conduits it often becomes necessary to locate the same in close proximity to steam-pipes or to flues, hot-air shafts, and other places where abnormal heat occurs. Under these circumstances 25 it has been found that where such armored conduits are provided with an insulating-lining, either in whole or in part, which liquefies for abnormal heat the insulation breaks down and is in effect destroyed and oftentimes at- 30 taches itself in liquid form to the inclosed conductor or conductors, thereby rendering it impossible to withdraw them when necessary. It is also found that where crosses occur between the conductors inclosed or where 35 there is abnormal current-leakage sufficient heat is generated to in a similar manner break down or destroy the insulation and also to unite the conductors to the walls of the tube through the agency of the liquefying ma- 40 dium. My invention effectually overcomes this trouble by firmly maintaining the insulating-lining against the inner walls of the ar- mored tube or pipe.

My invention will be fully understood by 45 referring to the accompanying drawing, which is a longitudinal sectional view of two armored conduit-tubes joined end to end by a screw-threaded collar and provided with an interior lining of insulating material, preferably pa- 50 per tubing, treated with asphalt in a manner well understood by those skilled in the art, and

my improved "metallic lining" located within said insulating-lining.

Referring now to the drawing in detail, the armored conduit-tubes, which are screw-threaded at their adjoining ends and united by a collar C, are composed of iron armor P 55 P, insulating-linings I I, preferably of paper treated with liquid asphalt, paraffin, or any well-known insulating medium; or this interior lining may be of pure asphalt or paraffin, or any medium, either in whole or in part, which will liquefy under abnormal temperatures.

My improvement consists in lining the in- 65 terior insulating-lining I with a metallic or other non-fusible or non-combustible lining P', preferably of thin-sheet-iron, although it may be of brass, copper, tin, or any material which will not liquefy and which is not com- 70 bustible under such temperatures as are found in the places indicated above or under such temperatures as result from an arc between any two inclosed conductors. When this interior lining is of iron or any other 75 metal which is of comparatively high inductive capacity, I separate the ends of the linings at the joints by definite spaces, as shown in the drawing, so as to overcome the inductive effect upon the inclosed conductors through- 80 out a system in which such conduits are used.

I am aware that it is not broadly new to line the interior of an armored conduit with sheet-lead for the purpose of firmly holding the insulation against the inner walls of the 85 conduit, such an arrangement having before been utilized in connection with a felt lining in an iron-armored conduit and disclosed in United States patent to Tatham, No. 417,088, granted December 17, 1889, and my claims 90 hereinafter made are not designed to be broad enough to include such a conduit-tube, the broadest scope of the claims being di- 95 rected to the utilization of a non-fusible or non-combustible interior lining for armored conduit-tubes where the insulation, held be- 100 tween the armor of the conduit-tube and the interior lining, is either wholly or in part of a material which will fuse or liquefy for tem- peratures above 617° Fahrenheit, at which temperature lead will fuse, the inner or non-combustible non-fusible wall of my invention.

being designed to withstand such temperatures as are found in close proximity to flues or chimneys or as are due to short circuits in great quantity or high-tension systems of electrical conductors.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. An armored conduit having an insulating-lining composed either wholly or in part of a material which liquefies at abnormal temperatures, in combination with a non-combustible non-liquefying interior lining adapted to withstand temperatures greater than the fusing temperature of lead, substantially as described.
2. An armored conduit-tube consisting of a metal armor and an insulating-lining either in whole or in part liquefiable under abnormal temperatures, in combination with an interior lining of a metal which will not fuse for such temperatures as will fuse or liquefy either lead or the insulating-lining.

3. A series of armored conduit-tubes provided each with a lining which is either wholly or in part liquefiable at abnormal temperatures, in combination with internal tubular linings for said armored tubes of an inductive metal such as iron, said linings being separated from each other by definite spaces, substantially as described.

4. An armored conduit-tube having an iron armor and an insulating-lining composed of paper or fibrous material treated with liquid asphalt under heat, in combination with an internal tubular lining of non-combustible non-liquefiable material, adapted to withstand temperatures greater than the fusing temperature of lead substantially as described.

In testimony whereof I have hereunto subscribed my name this 12th day of May, 1896.

EDWIN T. GREENFIELD.

Witnesses:

M. M. ROBINSON,  
C. J. KINTNER.